UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

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SILAS CALHOUN and EMILY CALHOUN, Individually and as Parents and Next Friends of ESTELLA CALHOUN,

Plaintiffs,

Civil Action No. 04-10480-RGS

v.

THE UNITED STATES OF AMERICA,

Defendant.

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Videotaped Trial Testimony Of: ORIGINAL

Marlene Jacqueline Wust-Smith, M.D.

Location: Interactive Videoconferencing Center
90 Air Park Drive
Rochester, New York 14624

Date: March 31, 2007

Time: 11:38 a.m.

Reported By: LYNN A. MULLEN, RPR
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MARLENE J. WUST-SMITH, M.D. - DX BY MR. APPEL

CONTINUED DIRECT EXAMINATION BY MR. APPEL:

Q. Dr. Wust-Smith, we are going now to the -- I guess it's February 29, 2000, and it would be the first visit to the clinic?

A. I have it in front of me.

Q. Okay. What -- in terms of this case and the issues in this case, what were the significant findings of that day?

A. The significant findings are that there is a weight recorded that is inconsistent with the natural history of newborn babies. You have an "8 pound, 13 ounce" filled in on the top line where the -- under "Insurance," "Yes" and "No." There's a line that says "Pulse"; it says "154." "Respiratory rate: 24," "Temp: 97.2." It's not noted whether it's rectal or oral or tympanic. The standard of care would dictate that in a newborn it should be rectal, and at all times it should be noted how it was obtained. And then it says, "Weight: 8 pounds, 13 ounces," "Age: Four days." Underneath in handwritten form it says, "Born: 8 pounds, 13 ounces; DC: 8 pounds, 8 ounces." As I discussed --

Q. Yeah, why is the 8 pounds, 13 ounces inconsistent with natural history here?

A. Because, as I discussed earlier, it is the accepted and the usual course of a newborn life's is for them to lose weight, up to 5 to 10 percent of their birth weight within that first week of life. So it is -- it would be actually almost impossible or highly unusual for a four-day-old to be back up to birth weight, particularly, you know, in a situation where the baby is being breast-fed. Sometimes you will be presented with a bottle-fed baby that someone is overfeeding, but it would be extremely unusual in a breast-fed baby to have regained the birth weight. So that is one very unusual finding in this document.

The other thing that's unusual is that this baby came in -- the medical complaint or the reason for a parent having made this appointment was that she was a four-day-old that had not stooled. In the encounter, there's really no addressing of the chief complaint. When a parent makes an appointment, the chief complaint needs to always be addressed, and in this encounter it is not addressed.

Q. Before you go on, Doctor, I see that in several places there's a -- that in handwriting it

says "no stools yet," and then in the -- in the typewritten portion again it talks about "no bowel movements," and it says "was passing meconium until three days ago." Again, is that an unusual finding?

A. It is for a breast-fed baby. We know -- and I don't know if Dr. Daub had access to the Beth Israel records -- that the baby did pass meconium in the hospital during that first and second day of life. By the third -- certainly by the fourth day of life, a mother who is breast-feeding should have an infant who is producing many stools per day; one per feeding at least, or one per every other feeding. So, to have no bowel movements at all is very concerning, and to not address the absence of bowel movements -- "What are we going to do about that absence of bowel movements?" -- to not assess rectal tone to make sure there's no meconium plugging, to not recheck the weight were, in my opinion, deviations from accepted standards of care.

Q. And how -- for instance, how should the weight have been rechecked, in your opinion?

A. When Dr. Daub or any provider is brought a child with these sort of vital signs, the first thing that should be done is to corroborate or

finding that the skin is loose. When a provider writes that, it is a sign of dehydration. Babies don't typically or normally have loose skin unless there is an absence of fluid, adequate fluid, which would cause the skin to feel and look loose, almost like a Shar Pei dog or puppy. That would be what you would mean by having loose skin.

Q. Okay. And what's the significance of the jaundice?

A. The jaundice was significant enough that it prompted Dr. Daub to order a blood test. About 60 percent of babies -- six out of ten -- will develop what we call physiologic jaundice, where they develop -- that they have trouble excreting broken-down red blood cells. It's a very complex pathophysiology that can be normal. When it reaches levels close to 20 or above 20, pediatric providers have to worry that there will be brain damage from the indirect bilirubin bathing the brain in something called kernicterus, that you want to identify and prevent in newborns. So that any time a baby appears jaundiced, you want to check the blood test, check the actual level of the bilirubin, which was done, and address whether or not it needs

treatment with phototherapy.

Q. Is there some relationship between the neonatal jaundice and dehydration?

A. There is. A baby will actually have an increased level of bilirubin if they are dehydrated. So of those six out of ten or 60 percent of babies who get physiologic jaundice, there are babies who will develop pathologic jaundice, and that is, you know, when there's another -- when it's not just a normal course of events where a baby's liver just hasn't fully started functioning or they have extra red blood cells that they have to metabolize. If a baby is dehydrated, they will have higher levels of -- there's a correlation between being jaundiced and being dehydrated.

Q. What actions did Dr. Daub take on that day with respect to any evaluation or assessment of Estella's condition?

A. He ordered a fractionated bilirubin, which is a blood test that tells you the total bilirubin, and that breaks it down into direct bilirubin and indirect bilirubin. He ordered a complete blood count, presumably to check for anemia, which she did not have, and he

it's an ABO incompatibility. The mother's blood type, I believe, is O positive. Dr. Daub at some point -- I believe this or the following visit; it's in the orders -- orders a blood type on Estella that is not done, not -- the lab doesn't have the right tube, or something where it's not appropriately done.

So, we basically have a baby who has a high level of jaundice, who is breast-fed, who we know has an inaccurate weight recorded, who is -- has loose skin, and the most-likely cause of this baby's jaundice at this point is probably dehydration; that she has lost a significant amount of weight that is not accurately ascertained.

Q. Doctor, let's, if you would, move to the record of the next day's visit. That would be March the 1st.

A. I have it.

Q. What are the significant findings on that date?

A. The most significant finding is that the baby's weight, again as recorded on the vital signs of this form, is written in as 8 pounds, 2 ounces, and that is a significant drop from the prior day's

weight, which we know to be inaccurate of 8 pounds, 13 ounces.

As I said previously, we can tolerate a 5 to 10 percent weight loss within the first week. This 11-ounce weight loss basically is all you could -- would tolerate. It's almost 8 percent just in one day. So right there it's a red flag that just in this one day this baby has lost a significant amount of weight.

Q. And, again, you're aware that the depositions of Mr. and Mrs. Calhoun indicate that again on this day Estella was weighed fully clothed?

MR. GIEDT: Objection. Leading. Go ahead.

Q. Well, are you aware -- are you aware of Mr. and Mrs. Calhoun's deposition testimony with respect to the weighing on this particular day?

A. I am.

Q. And what is your understanding of how the baby was weighed on March the 1st?

A. My understanding is that on both dates the child was fully clothed, wearing a hat, wearing a diaper, wearing, I believe, two blankets. It was March, it was cold, it was Boston, and that's in

associated with that dehydration. You can have what's called isonatremic dehydration, which is basically your sodium is normal. You can have hyponatremic dehydration, where the sodium is low, and you can have this hypernatremic dehydration, which is a -- I wouldn't say common, but one of the worrisome types of dehydration that we are trained as pediatricians to worry about in babies because it is one that can cause not just problems with blood pressure and how much fluid gets to the vital organs, it can cause osmotic shift; very -- it's sort of complicated, but not when you think about it. You worry about swelling, particularly in the brain, because of the way the body responds to that high sodium. So if you have -- if I can use the example if you have something very salty to drink, it makes you thirsty, it makes you want to drink plain water to -- something salty to eat; you want to drink water to compensate for that extra salt.

The body does the same thing. If there is a high circulating blood sodium, the way the body compensates for that high salt is to move water from inside cells into the blood stream; so that you take a cell that is full of water, and it will actually

leave -- the water leaves the cell to go into the blood stream to try to take care of that high circulating sodium.

That is a worrisome thing to happen in any cell in your body, but particularly worrisome in a newborn's brain because the brain is such a vital organ. If you take cells and actually they start shrinking, it can lead to problems such as venous stasis or sludging, where the vein -- the blood in the vessels doesn't move properly because you're shrinking it down, and so it can lead to clots, it can start a cascade of events called disseminated intravascular coagulation or coagulapathy, where you start bleeding or hemorrhaging into places that you're not supposed to. It can cause quite an imbalance in a very delicate system, and it requires extreme care in how you treat it, this hypernatremic dehydration, because you're basically dealing with a shrunken intracellular volume.

As you -- when you recognize that the baby has a high sodium and you start correcting it, you now have a concern about swelling of the brain. You can actually cause more damage than the hypernatremia was causing in and of its own by the

way you hydrate or give fluid to a baby. So you have to be very, very careful when assessing and treating the problem in and of itself.

Q. What was Estella's sodium level on her arrival to Emerson Hospital?

A. I believe it was 172, which is extremely high.

Q. What -- yes, I think you're right, Doctor.

A. And if I could add one thing about -- that's interesting and tricky about -- it's not something -- the hypernatremic dehydration can only sometimes present.

When you think about dehydration, you think about a baby or a person having been vomiting or having had -- you know, you worry -- you wonder about what -- how the person got there. One of the only reliable signs is actually the weight. When you lose fluid from other forms of dehydration, you vomit or you sweat excessively, you will have a history of having lost that. With hypernatremic dehydration, your total bodyweight goes down, but you can actually maintain a normal fontanel, the brain volume, because of those changes that are

happening within the cells. You can actually kind of look like you have enough fluid running through your veins and arteries, but in reality it's intracellular shifts that are occurring. So you have to be very -- one of the only signs other than this tenting can be just the weight loss, not the other signs that we look for with dehydration.

Q. Was this condition of severe hyper -- and let me back up here. Is it fair to say that Dr. Sutton, the attending physician at Emerson Hospital, felt that the hypernatremic dehydration was severe?

A. Yes. She notes that in several places and in her deposition, you know, that this was an almost 2-pound weight loss in a newborn, and because the sodium was so high, she termed it in several places accurately as severe hypernatremic dehydration.

Q. What is the upper limit of acceptable sodium in the blood, in your opinion?

A. Depends on the reference lab, but 145 is a typical high normal. Some reference labs will give you 142 or 143, but typically it's over 145 is high.

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Q. And, again, was the risk of this condition well known among pediatricians and providers of newborns?

A. It is something -- again, not -- not common, but one thing that they -- they train, I think even in medical school. Because of that pathophysiology of the intracellular volume depletion and the osmotic changes that occur in cells, it is something that is taught to students in medical school as a -- as a cascade of events that is known to occur not just in infants, but hypernatremic dehydration, and they'll give you examples, you know -- you know, in medical school and in pediatric residency. And I'm not familiar with how much time different -- different programs for family practitioners spend different amounts of time in pediatric training, because they're also trained in the care of geriatric patients and adult patients, so I can't tell you how much time is spent within a family-practice residency, but it is something that providers are made aware of and known to be something to look for, particularly in babies who are breast-fed or in babies whose parents are not literate and are not properly preparing formula.

degree of medical certainty as to whether the technician staff and in particular -- do you have an opinion to a reasonable degree of medical certainty as to whether the technical staff -- that is, Airman Best, who was the technician on the 29th, and Airman Hoang, who was the technician on March 1st -- deviated from the standard of care with respect to the weighing of Estella Calhoun?

A. Yes, I have an opinion.

Q. And what is that opinion?

A. That they deviated. A newborn baby -- any baby, really, that's there for assessment of growth and development needs to be weighed without any clothes on in order to properly ascertain their weight.

Q. And do you also have an opinion to a reasonable degree of medical certainty as to whether Dr. Daub deviated from good and accepted practice on March -- excuse me, February 29th and March 1st?

A. Yes, I do.

Q. And what is that opinion?

A. He deviated on the 29th by not addressing or rechecking that inaccurate weight of 8 pounds, 13 ounces, and by not doing -- not

has not been stooling properly, who has severe jaundice, who continues to have severe jaundice and who is -- has now lost 7 percent of their birth weight in one day.

Q. Dr. Wust-Smith, what is your opinion with respect to what would have been good and accepted practice by Dr. Daub during those two visits?

A. During those two visits, good and accepted practice would dictate that he would personally either reweigh the baby or ask one of the technicians to reweigh the baby in the accepted and standard way, which is without clothing, and to properly formulate a plan, particularly on the date -- on the second visit -- what is that, the 1st? -- to -- it's not acceptable to follow up a baby with that level of jaundice in two days. In my opinion, he should have either made a plan to follow up that weight the next day or admit the baby to a hospital or to a home-visiting nurse service, if that were available, for much closer monitoring of an at-risk baby.

Q. Dr. Wust-Smith, let me now just take you back to the Emerson Hospital record, and if you

which the baby is seen and weighed. No other vital sign are taken; it says "per provider." But the baby is noted to be twitching during this exam by Dr. Coleman, and yet was discharged home with this abnormal finding. She had some left-sided twitching during that exam that the parents had also reported at home, and yet she was discharged to home.

Q. What's the significance of that twitching to you?

A. Well, the twitching -- any time a baby twitches or moves an extremity in a non-voluntary fashion, you worry about seizure activity, and particularly in a baby who has had this hypernatremic dehydration. This is not a normal baby. We know that she's been discharged from the hospital with a critically -- with a history of having a critically high sodium, and you would expect a higher level of acuity or attention to be paid to any sort of abnormality. And, you know, not only is it given I believe by report -- it's hard for me to read this copy -- but I know from the depositions that the parents described this twitching at home, he actually observes this twitching and feels that it's nothing to worry

about. But we know that later that day the baby continued to have them, was taken to Children's Hospital in Boston and was found to have full-blown seizures and required intubation and treatment with anticonvulsants.

Q. What -- what was the diagnosis and her condition upon admission to Children's Hospital?

A. She was found --

MR. GIEDT: Objection and move to strike. This is outside the scope of her expert report, and she did not report on any of this. So -- and it doesn't fit within the Rules of Civil Procedure, Rule 26.

Q. You may continue.

And, again, just what I'm asking here, Doctor, is for you -- we're not going to go through in detail with respect to what the Children's Hospital admission, but what is your understanding of Estella's injuries and her diagnoses at Children's Hospital?

A. She was found to have seizures, an abnormal EEG. On CT scan and on MRI, she was found to have extensive thromboses in the venous system. She had a hemorrhage in the right thalamus, and she

had intracerebral -- intraventricular bleeding on the right side; all right-sided findings that -- with left-sided seizures.

MR. GIEDT: Once again I reinstate my objection.

Q. Do you have an opinion to a reasonable degree of medical certainty whether the deviation of care by the Hanscom staff and Dr. Daub was a substantial contributing factor in Estella's developing severe hypernatremic dehydration and her resulting injuries to her brain?

A. Yes, I have an opinion.

Q. And what is that?

A. My opinion is that had they properly weighed the baby, they would have discovered that the baby had lost significant amounts of weight and would have been able to intervene before this hypernatremic dehydration either developed or got as severe as it had gotten.

MR. APPEL: I have no further questions for you. Thank you, Doctor.

THE WITNESS: Thank you.

CROSS EXAMINATION BY MR. GIEDT:

Q. Good afternoon, Doctor. My name is